NOTICE OF COMMISSIONING

1824-A-NOC-121

MINERA PANAMA
COMMISSIONING IN PROGRESS
PUESTA EN MARCHA EN PROGRESO
The purpose of this TAG is to IDENTIFY EQUIPMENT which is still in the commissioning phase.
El propósito de esta ETIQUETA es para IDENTIFICAR el EQUIPO que está bajo la etapa puesto en marcha.
This equipment must not be operated without the Permission of the Commissioning Manager or Authorised Nominee.
No operar este equipo sin el Permiso del Director de Comisión o del Designado Encargado.
This Tag can only be removed by the Commissioning Manager or Authorised Nominee.
Solo el Director de Comisión o Designado Encargado puede quitar esta Etiqueta.
SEE OTHER SIDE / VER EL REVERSO

Date: August 11, 2018 – 06:00am

System ID: 2-506

System Description: Circulating Water System.

Contact Name: Brenton Sherston, Ronald Freiley, Eduardo Garrido

Contact Number: 64422720, 69804558, 69786077

Fecha: 11 de Agosto del 2018 – 06:00 am

ID Sistema: 2-506

Descripción del Sistema: Sistema de circulación de agua

Nombre Contacto: Brenton Sherston, Ronald Freiley, Eduardo Garrido

Número de Contacto: 64422720, 69804558, 69786077

ENGLISH

All equipment's for Circulating Water System are now under Commissioning. Access restrictions will be in force. All equipment access will be locked with appropriate signage. Any work on this system requires approval from the Commissioning Manager PTW and LOTO. See attachments.

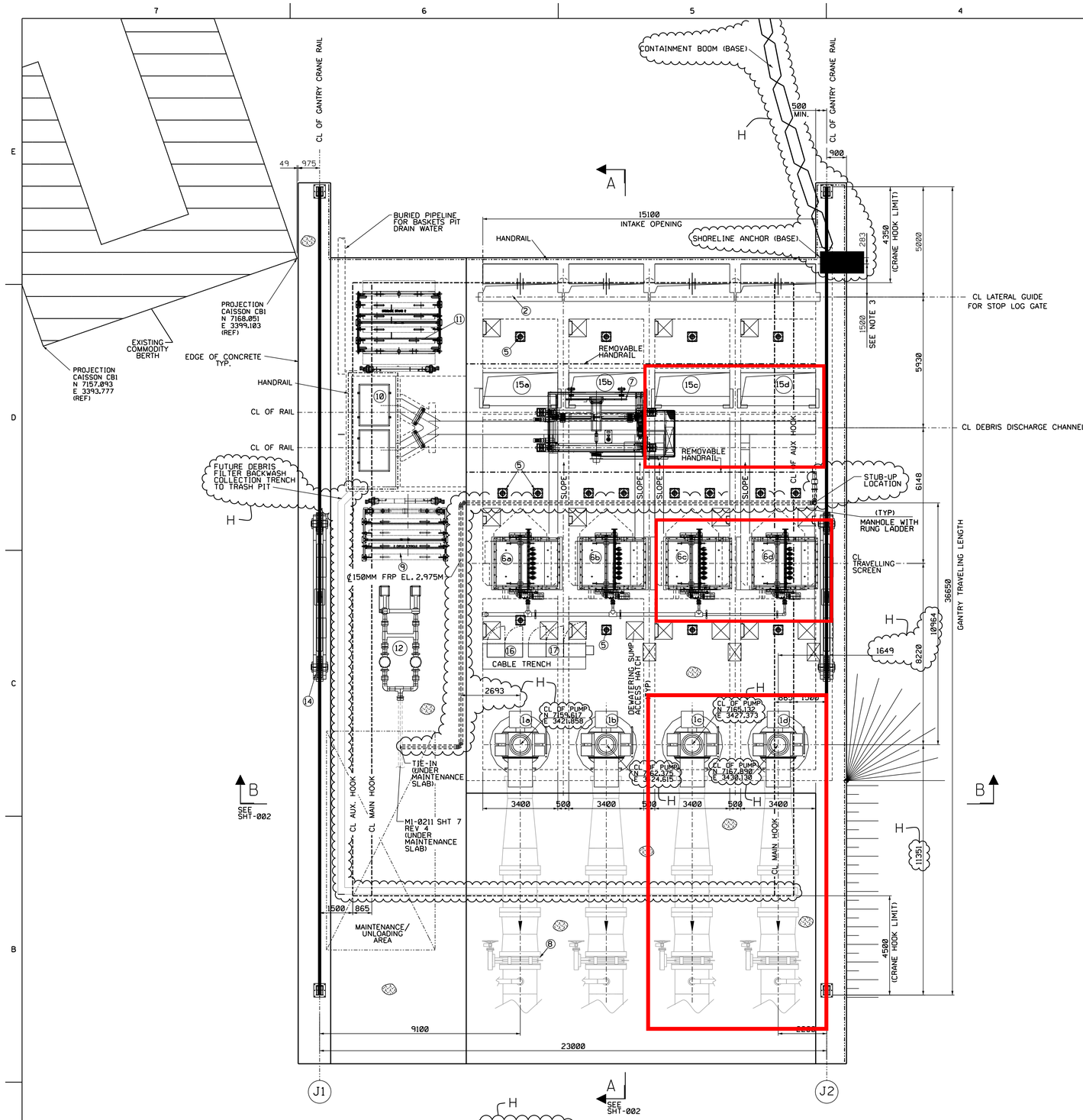
SPANISH

Todos los equipos de los Sistemas de circulacion de agua estaran bajo puesta en marcha. Las restricciones de acceso estaran en vigor. Todos los accessos a estos equipos se bloquearan con senalizacion apropiada.

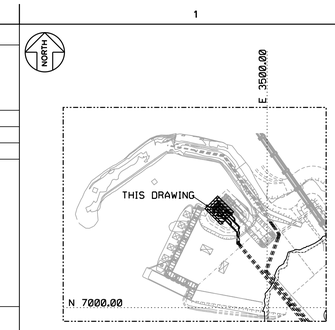
Cualquier trabajo en este sistema requiere la aprobación del Gerente de Comisionamiento de PTW y LOTO. Ver adjuntos

POST ON ALL PACO SAFETY NOTICE BOARDS

PACO MANAGERS & SUPERINTENDENTS TO **ENSURE** THIS **NOC** IS COVERED IN TOOLBOX MEETINGS AND ALL PERSONNEL ARE AWARE OF THE HAZARDS.



NO.	QTY.	EQUIPMENT TAG NO.	DESCRIPTION
1a		1CW001PA	
1b		1CW001PB	
1c	04	2CW001PA	CW PUMP
1d		2CW001PB	
2	04	-	STOP LOG GATE
3	00	-	NOT USED
4	00	-	NOT USED
5a		1LIT-CW351/352	
5b		1LIT-CW360/361	
5c		1LIT-CW353/354	
5d		1LIT-CW362/363	
5e	20	1LIT-CW001A/B	LEVEL TRANSMITTER
5f		2LIT-CW351/352	
5g		2LIT-CW360/361	
5h		2LIT-CW353/354	
5i		2LIT-CW362/363	
6a		1CW303F	
6b		1CW304F	
6c	04	2CW303F	TRAVELLING WATER SCREEN (DUAL FLOW TYPE)
6d		2CW304F	
7	01	0SW0305S	TRASH RACK WITH RAKE MECHANISM
8	04	-	BUTTERFLY VALVE
9	01	-	STORAGE STAND-2(STOP LOG, LIFTING BEAM,)
10	01	-	TRASH PIT WITH BUCKET
11	01	-	STORAGE STAND-1 (STOP LOG SUPPORTS, CLEANING SUPPORTS AND SCRAPPER SUPPORTS)
12	01	0SW001S	SCREEN WASH PUMP SKID
13	00	-	NOT USED
14	01	0HC0025	GANTRY CRANE (20MT/5MT)
15a		1CW301F	
15b		1CW302F	
15c	04	2CW301F	FIXED BAR SCREEN ASSEMBLY
15d		2CW302F	
16	01	0CW350S	LOCAL CONTROL PANEL
17	01	-	CATHODIC PROTECTION CONTROL PANEL



KEY PLAN

NOTES

1. ALL DIMENSIONS ARE IN MM, ELEVATIONS AND COORDINATES ARE IN M, UNLESS OTHERWISE NOTED.
2. DELETED
3. MANHOLE, DEWATERING SUMP ACCESS HATCH AND STOP LOG OPENING SHALL BE COVERED WITH REMOVABLE GRATING COVER.
4. GANTRY CRANE CAPACITY IS IN METRIC TON.

REFERENCE DRAWINGS

M0-0001	GA SITE DEVELOPMENT
M1-0211	CW PIPING ISOMETRICS UNIT*1
M2-0211	CW PIPING ISOMETRICS UNIT*2
112170-ME-GA-MF220-P6007-00001	GA FOR CW PUMP
112170-ME-DW-MJ410-P6038-00001	CW SYSTEM CIVIL WORKS
112170-ME-GA-MJ410-P6038-00001	INSTALLATION LAYOUT
112170-ME-GA-MK100-P6031-00002	GA GANTRY CRANE
1824-727-MS-DRG-101	INTAKE CAISSON CONCEPT GA PLAN
C0-0250	AQUATIC VEGETATION CONTAINMENT BOOM LOCATION

HOLD INFORMATION

NO.	DESCRIPTION

LEGENDS

NO.	DESCRIPTION
	GRATING
	CONCRETE
	MANHOLE
	HANDRAIL
TOC	TOP OF CONCRETE
MSL	MEAN SEA LEVEL
	FLOOR CUTOUT
	ELECTRICAL CABLE PULL PIT
CL	CENTER LINE

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

CHART DATUM (CD)	MAIN SEA LEVEL (MSL)
0M	0.23M
4M	4.23M

GRAPHIC SCALE IN METERS
0 1 2 3 4 5 10M
SCALE 1:75

This drawing has been drawn by, or reproduced from, a drawing prepared for SKEC under S&L Project 12889-001. Modification is for MPSA under S&L Project 13426-000.

Contractor: SK E&C USA
Engineer: Sargent & Lundy
Client: Minera Panamá

PROJECT NO.: 12889-001
Project Title: PACO POWER PLANT

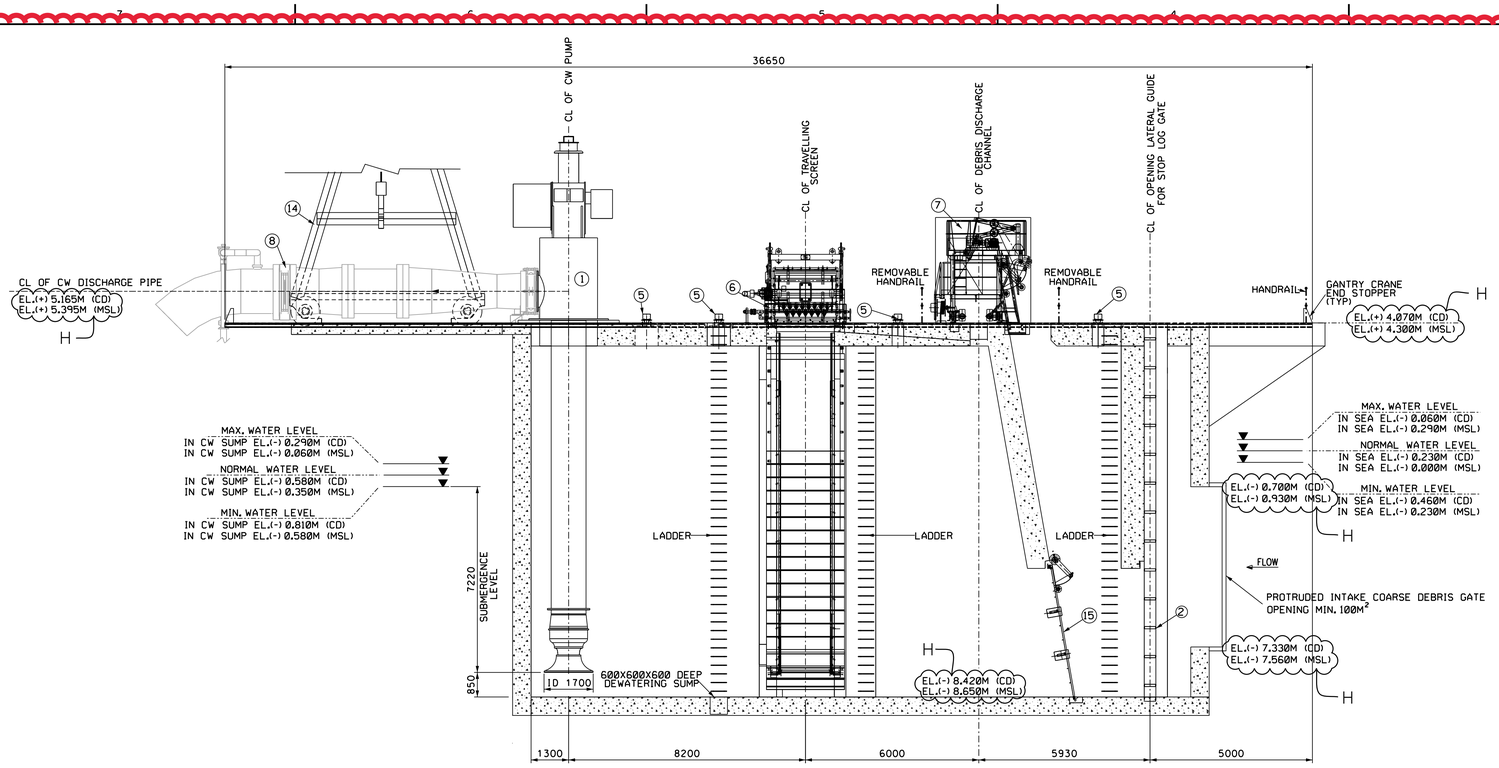
DRAWING TITLE
GENERAL ARRANGEMENT CIRCULATING WATER PUMP STATION (PLAN VIEW)

DRAWING NUMBER: M0-0005
REVISION: H
SHEET 001 OF 002

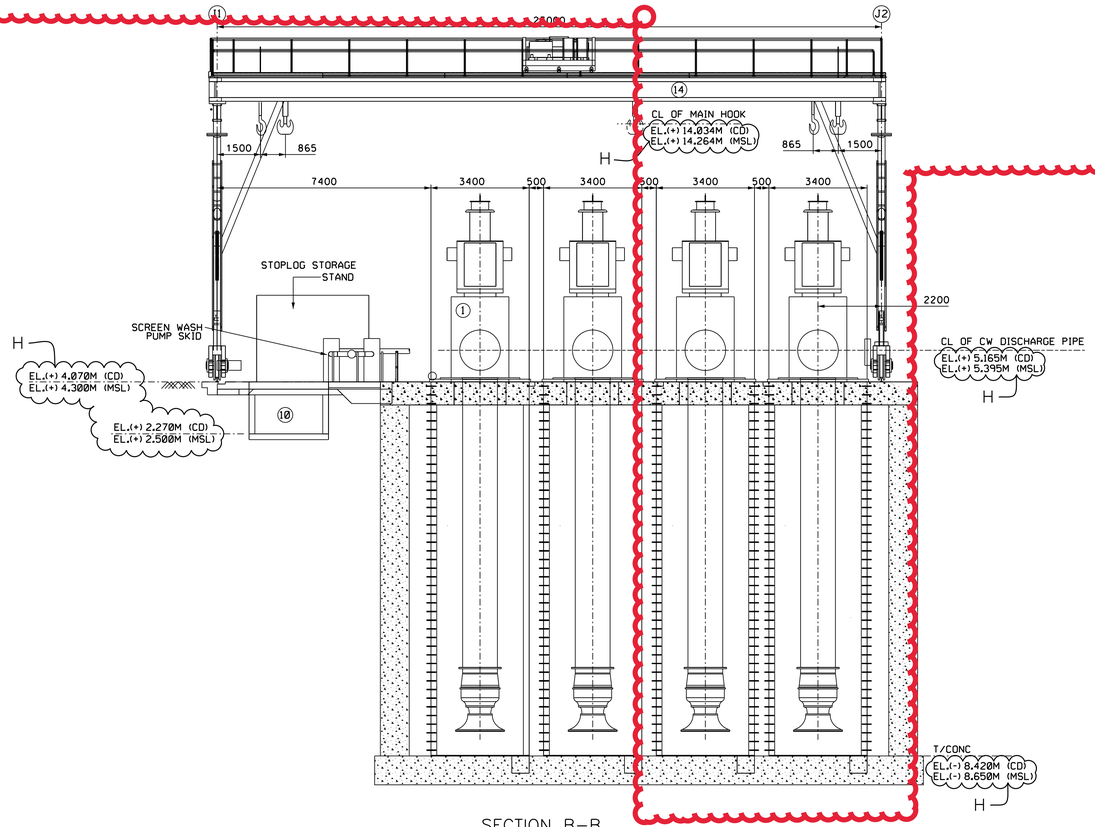
CAD FILE: M0-0005-001.DGN

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
E	06FEB2014	P.GOHIL	K.THAKOR/V.SHAH	Y.MISHRA/E.SHAMEEM	ISSUED FOR DESIGN WITH OPTION 2A UPDATES
F	20JAN2015	W.SAMA	K.THAKOR/R.JOHNSTON	Y.MISHRA/R.JOHNSTON	ISSUED FOR DESIGN FOR PROJECT 13426-000
G	18NOV2016	R.PONIATOWSKI/R.MILLER	V.SHAH/G. WILLMAN	M.KUCZYNSKI	ISSUED FOR DESIGN
H	08NOV2017	R.MILLER	D.JUNIS/G. WILLMAN	M.KUCZYNSKI	ISSUED FOR DESIGN



SECTION A–A



SECTION B–B

NO.	DESCRIPTION
1	CW PUMP
2	STOP LOG GATE
5	LEVEL TRANSMITTER
7	TRASH RACK WITH RAKE MECHANISM
8	BUTTERFLY VALVE
10	TRASH PIT WITH BUCKET
14	GANTRY CRANE 20 MT/5 MT
15	FIXED BAR SCREEN ASSEMBLY

CHART DATUM (CD)	MAIN SEA LEVEL (MSL)
0M	0.23M
4M	4.23M

GRAPHIC SCALE IN METERS

0 1 2 3 4 5 10M

SCALE 1:75

This drawing has been drawn by, or reproduced from, a drawing prepared for SKEC under S&L Project 12889-001. Modification is for MPSA under S&L Project 13426-000.

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
E	06FEB2014	P.GOHIL	K.THAKOR/V.SHAH	Y.MISHRA/E.SHAMEEM	ISSUED FOR DESIGN WITH OPTION 2A UPDATES
F	20JAN2015	K.THAKOR	K.THAKOR/R.JOHNSTON	Y.MISHRA/R.JOHNSTON	ISSUED FOR DESIGN FOR PROJECT 13426-000
G	18NOV2016	R.PONIATOWSKI/R.MILLER	V.SHAH/G.WILLMAN	M.KUCZYNSKI	ISSUED FOR CONSTRUCTION
H	08NOV2017	R.MILLER	D.JUNIS/G.WILLMAN	M.KUCZYNSKI	ISSUED FOR DESIGN

NOTES

1. FOR GENERAL NOTES AND LEGENDS REFER TO DRAWING: M0-0005-001

REFERENCE DRAWINGS

1. FOR REFERENCE DRAWINGS SEE DWG. M0-0005-001.

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA

Engineers: Sargent & Lundy

Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

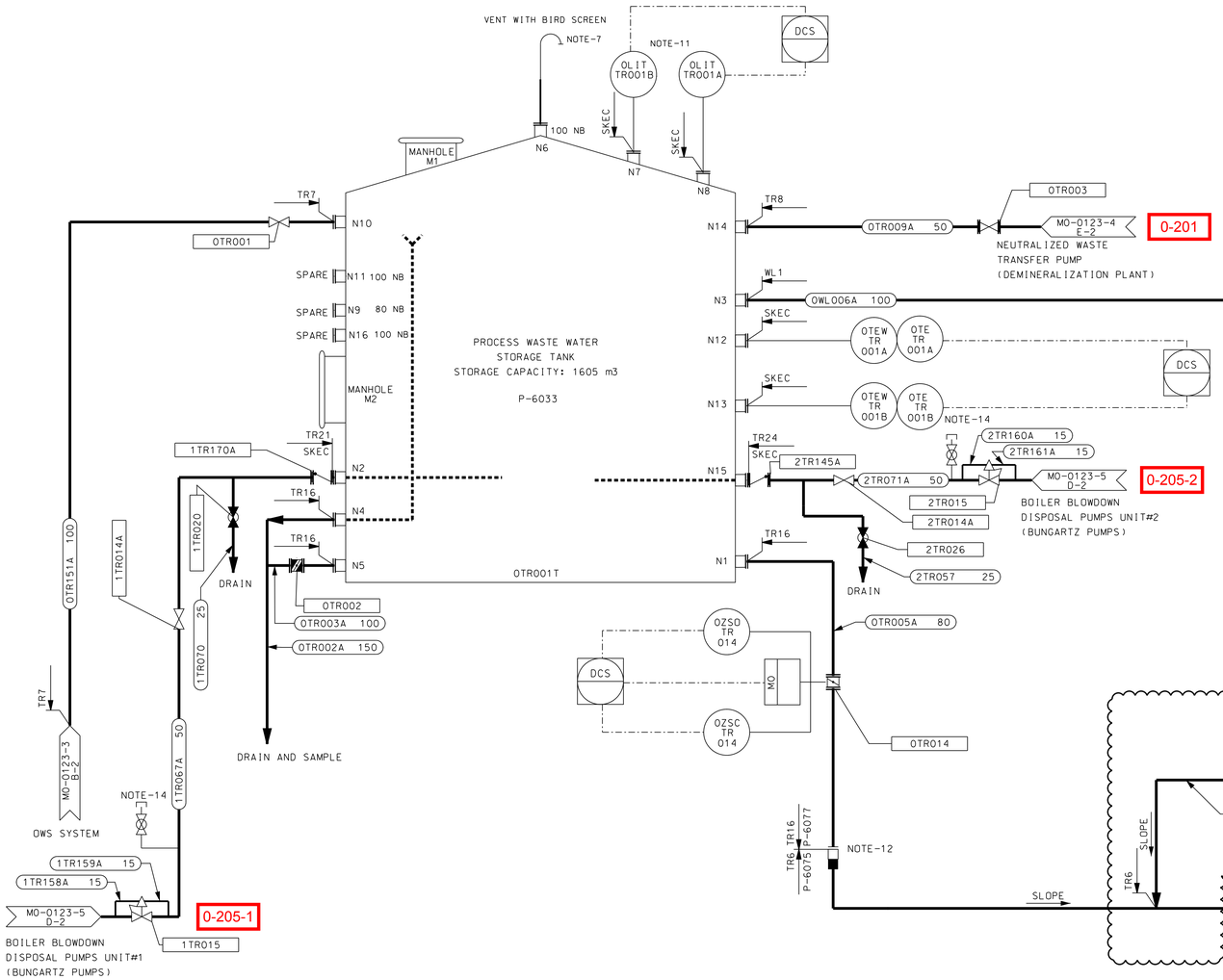
GENERAL ARRANGEMENT
CIRCULATING WATER
PUMP STATION
(SECTIONAL VIEW)

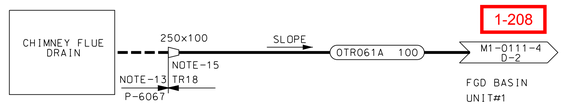
DRAWING NUMBER	REVISION
M0-0005	H

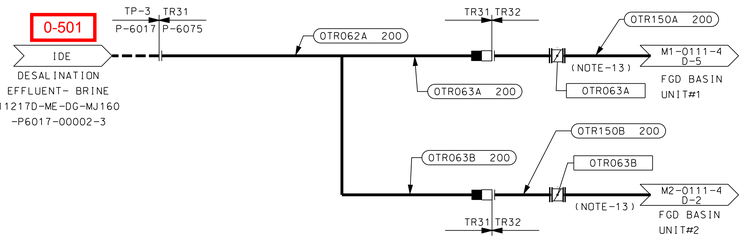
SHEET 002 OF 002

CAD FILE: M0-0005-002.DGN

PDC NUMBER	DESIGN PRESSURE (bar(g))	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (bar(g))	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (bar(g))	REMARKS
TR16	3.50	60.000	1.00	50.000	D	PAC 0094	D	PAC 0659	N	5.25	LINED CS
TR18	3.50	105.000	1.00	101.000	D	PAC 0140	D	PAC 0659	A1	NA	ASTM A312 GRTP304
TR21	11.00	171.000	3.96	102.600	D	S&L 0105	D	PAC 0659	A1	16.50	ASTM A106 GR B
TR24	12.00	171.000	4.88	102.600	D	S&L 0105	D	PAC 0659	A1	18.00	ASTM A106 GR B
TR31	7.00	38.000	3.00	32.500	W	S&L 0092	D	PAC 0659	N	10.50	HDPE
TR32	7.00	38.000	3.00	32.500	D	PAC 0091	D	PAC 0659	N	10.50	CPVC
TR6	3.50	60.000	1.00	50.000	W	S&L 0092	D	PAC 0659	N	5.25	HDPE
TR7	4.50	45.000	4.13	30.000	D	S&L 0105	D	PAC 0659	N	6.75	ASTM A106 GR B
TR8	4.00	45.000	3.50	30.000	D	PAC 0091	D	PAC 0659	N	6.00	CPVC
WL1	5.20	35.000	5.07	30.000	D	PAC 0092	D	PAC 0659	N	7.80	GRP/FRP







NOTES:

1. FOR LEGENDS & SYMBOL REFER TO DRAWING NO. MO-0100.
2. PIPING LOW POINT DRAINS & HIGH POINT VENTS TO BE PROVIDED.
3. ALL PIPE SIZES INDICATED IN THE P&ID ARE NOMINAL SIZES IN MM UNLESS OTHERWISE SPECIFIED.
4. MINIMUM SLOPE OF GRAVITY PIPE SHALL BE 1:200
5. DELETED.
6. DELETED.
7. VENT WITH BIRD SCREEN SHALL BE PROVIDED BY TANK VENDOR.
8. TANK MOUNTED LEVEL TRANSMITTER SHALL BE OF RADAR TYPE.
9. UNDER GROUND PIPES SHALL BE PROVIDED WITH A MINIMUM EARTH COVER OF 750 MM.
10. FIELD TEST PRESSURE 'O' INDICATES THAT HYDROSTATIC TESTING IS NOT REQUIRED FOR THESE PIPES AS THESE GRAVITY LINES ARE OPEN TO ATMOSPHERE.
11. RADAR TYPE LEVEL TRANSMITTER WILL BE PROVIDED.
12. GAP SHALL BE PROVIDED BETWEEN TANK OUTLET PIPE AND GRAVITY DRAIN PIPE ENABLING AIR ENTRY.
13. HYDROSTATIC TEST NOT REQUIRED FOR DOWNSTREAM PIPING OF VALVE AS IT IS OPEN TO ATMOSPHERE.
14. TEST PORT PROVIDED TO MEASURE PRESSURE IN THE DOWNSTREAM OF PRESSURE REDUCING VALVE BY INSTALLING PRESSURE GAUGE.
15. ECCENTRIC REDUCER SHALL BE USED AT TERMINAL POINT.

Rev 1 JTB 6/20/17
-Dwg Revision

STP SCOPING DWG

- 0-201 PROCESS WATER & NEUTRALIZATION SYSTEM
- 0-202 OILY WATER SEPARATOR
- 0-205-1 BOILER BLDG SUMPS & DRAINS UNIT 1
- 0-205-2 BOILER BLDG SUMPS & DRAINS UNIT 2
- 0-501 DESALINATED WATER SYSTEM
- 1-208 FGD AUX EQUIP & DEWATER SUMPS/DRAINS
- 1-506 CIRCULATING WATER SYSTEM
- 2-506 CIRCULATING WATER SYSTEM

REFERENCE DRAWINGS

M1-0111-4	P&ID FOR CIRCULATING WATER SYSTEM
MO-0130-1	P&ID FOR SEA WATER SUPPLY SYSTEM
11217D-ME-DG-MJ160 -P6017-00002	P&ID FOR DESALINATION SYSTEM
E3-05800120425	P&ID FOR WATER TREATMENT SYSTEM (11217D-ME-DG-MJ149 -P6010-00001)

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA
Engineers: Sargent & Lundy
Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

DRAWING TITLE

P & ID

WASTE WATER SYSTEM

DRAWING NUMBER	REVISION
MO-0123	4
SHEET 1 OF 9	

CAD FILE: MO.0123-001.DGN

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
4	04-12-2017	N.PAREKH	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
2	03-19-2015	M. MISHRA	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION
3	10-01-2015	N.PAREKH	K.BELLIGUNDU	Y.MISHRA/R.JOHNSTON	ISSUED FOR CONSTRUCTION

ALL 2-506
CIRCULATING WATER SYSTEM

CONTROL WIRING SUPPLIED BY MGMOMG

S = MGMOMG
C = CONTRACTOR SK E&C

P&I SYMBOLS

BALL VALVE
GATE VALVE
BUTTERFLY VALVE
GLOBE VALVE
AUTOMATIC VENT
DIAPHRAGM VALVE
CHECK VALVE "LIFT" TYPE
CHECK VALVE "CLAPET" TYPE
THREE WAYS BALL VALVE
SAFETY VALVE
STOP CHECK VALVE
"Y" FILTER
CONC. OR ECC. REDUCTION
BASKET FILTER
EXPANSION JOINT
CAP
ORIFICE PLATE
RUPTURE DISK
SPECIAL SPOOL
REDUCED SPECIAL SPOOL

TEMPORARY OR PERMANENT FILTER
DISMALTING COUPLING
PULSATION DAMPER
STEAM TRAP
HOSE CONNECTION
BLIND DISK / SPACER
HYDRAULIC UNIT
PNEUMATIC ACTUATOR
ELECTRIC ACTUATOR
INTERLOCK
METERING PUMP
EJECTOR
STATIC MIXER
CONTROL VALVE

I&C SYMBOLS

FIELD MOUNTED
FIELD ON-LINE MOUNTED
INSTRUMENTS ELECTRICAL SIGNAL HYDRAULIC CIRCUIT
MCC LOCATED ON M.V. OR L.V. SWITCHGEAR
DCS / PLC DISPLAYED FUNCTIONS
HARD WIRING FUNCTIONS INSTRUMENTATION INSERTED ELEMENT

1/2 CW – XXX – 100 – PVC-C
LINE NUMBER
MEDIUM
PIPE SIZE
PIPE MAT.L

0SW355A 100PVC-C
0SW355AA 150PVC-C
1SW356AB 80 PVC-C
1SW357AB 80 PVC-C
2SW356AB 80 PVC-C
2SW357AB 80 PVC-C

DOWNSTREAM TRAVELLING SCREEN
UPSTREAM TRAVELLING SCREEN
LIMIT SWITCH FOR MANUAL BUTTERFLY VALVE
MANUAL SLUICE GATE
DEBRIS BASKETS CAP. 2m³ eachone
DEBRIS DISCHARGE CHANNEL
DOWNSTREAM BAR SCREEN
UPSTREAM BAR SCREEN
BAR SCREEN
TRAVELLING SCREEN
LINE 1
LINE 2
LINE 3
LINE 4
PLC

Q = 180 m³/h
P = 4,0 barg

SCREEN WASH PUMP
(2 x 100%)

0SW309P-MTR001
0SW388AA 150 PVC-C
0SW308PB
0SW308P-MTR001
0SW389AA 150 PVC-C
0SW308PA
0SW390AA 150 PVC-C
0SW391AA 150PVC-C
0SW3550A 150 PVC-C

FROM CWP
Q = 180 m³/h
P = 1,85÷2,5 barg
AT THE OUTLET OF CWP
ND6" ANSI 150Lb FF

(2X100%) SIMPLEX STRAINER

SPRAY WATER SUPPLY BY SK E&C FROM C.W. PUMPS Q=120 m³/h P=1,0 barg ND 4" ANSI 150Lb F.F.

1CW359P
SUBMERSIBLE SEA WATER PUMP
Q=30m³/h H= 50m

MOBILE CLEANING DEVICE FOR STOPLOG GUIDES OF LINE 1 AND 2

2CW359P
SUBMERSIBLE SEA WATER PUMP
Q=30m³/h H= 50m

MOBILE CLEANING DEVICE FOR STOPLOG GUIDES OF LINE 3 AND 4

ENCODER LINES ZONE
RIGHT END PARKING
LEFT END PARKING
HOISTING MOTOR
TRAVELLING MOTORS
OVERLOAD LIMIT SWITCH
LIMIT SWITCH RIGHT END
LIMIT SWITCH LEFT END
LIMIT SWITCH CLIMB RAKE
LIMIT SWITCH DESCENT RAKE
CLOSED RAKE
OPEN RAKE
SLACK CENTRAL ROPE
HYDRAULIC UNIT MOTOR
HYDRAULIC UNIT FOR RAKE OPEN/CLOSED ON BOARD MACHINE
MAX. OIL PRESSURE
MIN.OIL LEVEL
MAX. OIL TEMPERATURE
MOBILE TRASHRACK RAKE

Rev 1 JTB 6/20/17
-Vendor Dwg Revision

REV	DATE			
E	10/12/13	FOR_APPROVAL		GS_RM
D	21/10/13	FOR APPROVAL		GS RM
0	26/05/14	FOR CONSTRUCTION		GS RM
G	24/03/14	FOR APPROVAL		GS RM

DATA DATE | MODIFICA ESEGUITA O MOTIVO DELLA SOSTITUZ. MODIFICATION EXECUTED OR REASON OF THE REPLACEMENT | DIS. DRAWER | APP.

Fabb. di riferimento N. Ref. material list	Materiale Material	Trattamento Treatment	Toll. gen. lav. Mach. tolerance	Mod. o stampo Type	Peso ca. Weight kg	Scala Scale
					/	/

MGM OMG
OFFICINE MECCANICHE GALILEO S.r.l.
via Brigata Tridentina, 2-35020 PERNUMIA (PD) ITALIA
Tel. +39 0429 778388 – Telefax +39 0429 778290
mail: info@mgmomg.com – Web: www.omg-italy.com

A termine delle vigenti leggi questo disegno non può essere copiato, riprodotto, comunicato o terzi senza nostra autorizzazione scritta.

DIS. DRAWER: GS
VER.: GS | DATA DATE
APP.: RM | 20/02/2013

PACO COAL FIRED POWER PLANT
SEA WATER SCREENING SYSTEM
P&I DIAGRAM

Dis. di riferimento N. Ref. Drawing | Pos. | G | E
Comm. / Job: N. 22190 | Disegno / Drawing: N. 100980-1000 | 1/1 | 0 | F | D

0	14.05.26	FOR CONSTRUCTION	G.S.	G.S.	R.M.
G	14.02.03	FOR APPROVAL	G.S.	G.S.	R.M.
F	14.02.03	FOR APPROVAL	G.S.	G.S.	R.M.
E	13.12.10	FOR APPROVAL	G.S.	G.S.	R.M.
D	13.10.21	FOR APPROVAL	G.S.	G.S.	R.M.
C	13.07.11	FOR APPROVAL	G.S.	G.S.	R.M.
B	13.05.07	FOR APPROVAL	G.S.	G.S.	R.M.
A	13.02.20	FOR APPROVAL	G.S.	G.S.	R.M.

OWNER
Minera Panamá — Minera Panama S.A

CONTRACTOR
SK E&C — SK Engineering & Construction Co. Ltd.,

VENDOR
MGM OMG — OFFICINE MECCANICHE GALILEO S.r.l.
via Brigata Tridentina, 2-35020 PERNUMIA (PD) ITALIA
Tel. +39 0429 778388 – Telefax +39 0429 778290
mail: info@mgmomg.com – Web: www.omg-italy.com

TITLE: CIRCULATING WATER SYSTEM P & ID | SCALE: NONE

MGM-OMG-PJT NO.	WORK NAME	SKEC JOB NO.
22190	PACO POWER PLANT PROJECT	11217D

CONTRACTOR DOC. NO: 11217D-ME-DG-MJ410-P6038-00001

DRAWN	CHECKED	APPROVED	MGM-OMG DOC. NO.	
G.S.	G.S.	R.M.	100980-1100	0A
13.05.07	13.05.07	13.05.07		

Sargent & Lundy LLC

THIS DRAWING HAS BEEN DRAWN BY, OR REPRODUCED FROM, A DRAWING PREPARED BY AN ORGANIZATION OTHER THAN SARGENT & LUNDY. SARGENT & LUNDY IS NOT RESPONSIBLE FOR WORK BY OTHER ORGANIZATIONS.

DRAWING RELEASE RECORD

REV	DATE RELEASED	PURPOSE	
0A	28OCT2016	FOR CONSTRUCTION PROJECT 13426-000	PREPARED: DR/CE; REVIEWED: MK; APPROVED: ML

A1(594x841 %)

PDC NUMBER	DESIGN PRESSURE (bar(g))	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (bar(g))	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (bar(g))	REMARKS
CW1	5.20	35.000	4.00	30.000	D	PAC 0095	D	PAC 0659	N	7.80	GRP/FRP
CW8	5.20	35.000	4.00	30.000	D	PAC 0092	D	PAC 0659	N	7.80	GRP/FRP
WL1	5.20	35.000	5.07	30.000	D	PAC 0092	D	PAC 0659	N	7.80	GRP/FRP

NOTES:
1) FOR LEGEND AND SYMBOLS PLEASE REFER TO DRAWING NO MO-0100.
2) PIPE SIZES INDICATED FOR FRP PIPES ARE THE INSIDE DIAMETER OF PIPE IN MM.
3) INSTRUMENTATION FOR CW PUMP MOTOR WILL BE COVERED IN CW PUMP SUPPLIER P&ID.
4) VIBRATION SENSORS WILL BE PROVIDED FOR CW MOTOR AND WILL BE COVERED IN CW PUMP SUPPLIER P&ID.
5) MANHOLE SHALL BE OF MINIMUM 600 MM SIZE. MANHOLES SHALL BE PROVIDED AT SUITABLE LOCATIONS AS PER PIPING LAYOUT.
6) INSTRUMENTATION AND CONTROL REQUIRED FOR OPERATION OF TRAVELING BAND SCREEN AND TRASH RAKE OPERATION SHALL BE AS PER SUPPLIERS P&ID SEA WATER SCREENING SYSTEM (P-6038).
7) COMPLETE PIPING OF CHLORINATION INCLUDING SIZING, VALVES, INSTRUMENTATION & EQUIPMENT FROM ELECTOCHLORINATION PLANT (ECP) OUTLET UP TO CW INTAKE SUMP IS UNDER ECP SUPPLIER'S SCOPE. FOR FURTHER DETAIL REFER HYPOCHLORITE DOSING SYSTEM P&ID. DETAILS SHOWN HERE ARE INDICATIVE. 11217D-ME-DG-MJ420-P6018-00001-03.
8) LEVEL TRANSMITTERS FOR INDIVIDUAL CW PUMP SUMPS SHALL BE OF RADAR TYPE.
9) DELETED
10) DELETED
11) DELETED
12) CW PUMP SUPPLIER TO PROVIDE CW PUMPS WITH REVERSE ROTATION RATCHET TO PROTECT MOTOR IN THE EVENT THE DISCHARGE ISOLATION VALVES FAILS TO PREVENT BACK FLOW.
13) INSTRUMENT CONNECTIONS ON PIPES AND OR TANKS SHALL BE AS PER PACO INSTRUMENT CONNECTION SIZE AND THERMOWELL CRITERIA DOCUMENT.
14) SIGNAL FROM LEVEL TRANSMITTERS (SUPPLIED BY CIRC WATER CLEANING SYSTEM VENDOR (P-6038)) PLACED AT OUTLET OF TRAVELLING SCREEN SHALL BE USED AS REDUNDANT SIGNAL FOR CW BAY LEVEL MEASUREMENT IN DCS.
15) "*" INDICATED ITEMS WILL BE SUPPLIED BY CIRCULATING WATER CLEANING SYSTEM VENDOR (P-6038).
16) FLANGED SPOOL SECTION TO FACILITATE FUTURE INSTALLATION OF DEBRIS FILTER

REFERENCE DRAWINGS

11217D-ME-DG-MJ410-P6038-00001	P&I DIAGRAM SEA WATER SCREENING SYSTEM
11217D-ME-GA-MF220 P6007-00001	GENERAL ARRANGEMENT DRAWING FOR CW PUMP
11217D-ME-DG-MJ420-P6018-00001	P&ID FOR ELECTROCHLORINATION SYSTEM
11217D-CSA-DW-ME0003-P6066-00031	P&ID FOR INTAKE SYSTEM

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA
Engineers: Sargent & Lundy
Client: Minera Panamá

PROJECT NO.: 12889-001
Project Title: PACO POWER PLANT

DRAWING TITLE

P & ID CIRCULATING WATER SYSTEM

DRAWING NUMBER	REVISION
M2-0111	5
SHEET 1 OF 4	

CAD FILE: M2-0111-001.DGN

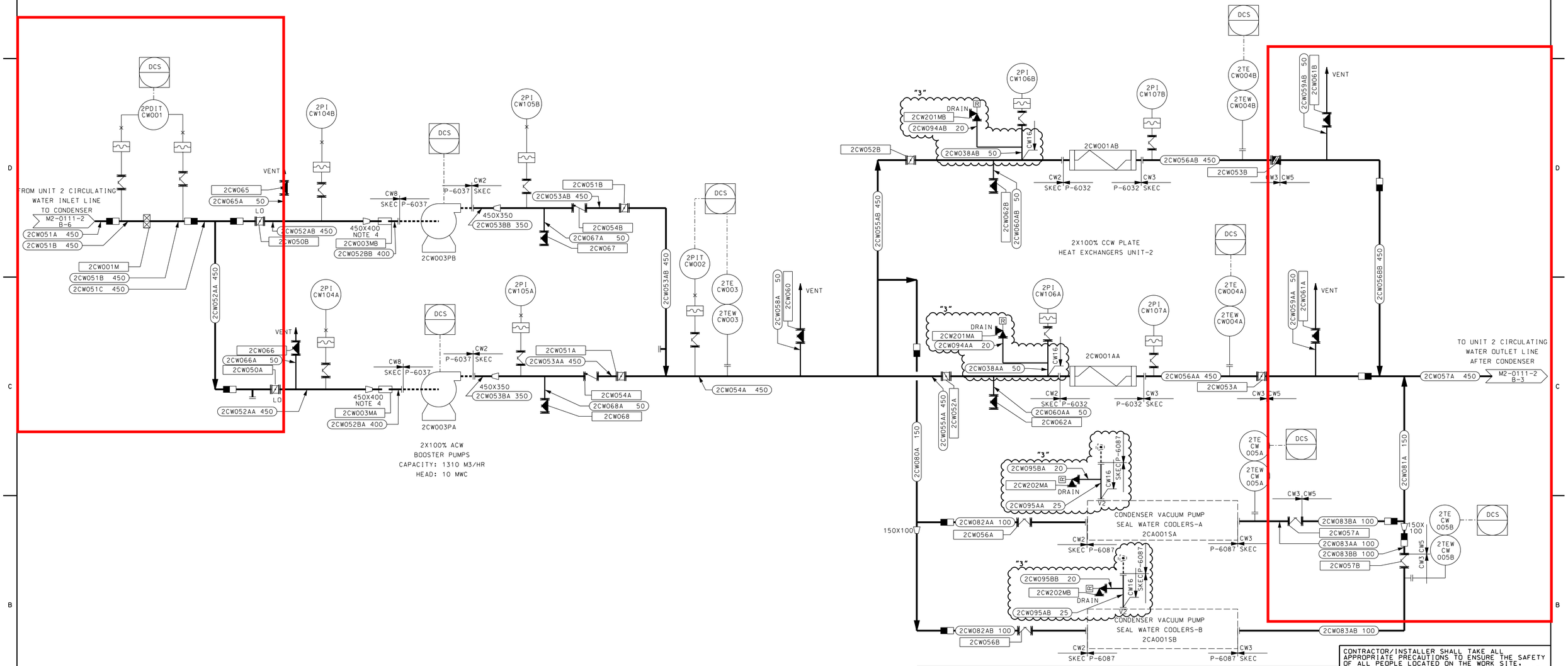
DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
4	01-07-2016	M.H.PATEL	K.BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION FOR PROJECT 13426-000
5	01-17-2018	D.FENNESY	M.LEUTLOFF	M.LEUTLOFF	ISSUED FOR CONSTRUCTION FOR PROJECT 13426-000
3	12-17-2015	M. H. PATEL	K. BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION FOR PROJECT 13426-000

Sargent & Lundy
This drawing has been drawn by, or reproduced from, a drawing prepared for SKEC under S&L Project 12889-001. Modification is for MPSA under S&L Project 13426-000.

HIGH POINT VENT NOTE 5 2CW008 MANHOLE 2CW012A 1000
HIGH POINT VENT NOTE 5 2CW015 MANHOLE 2CW016A 1000
2CW004M 2CW006A 300 2CW093
HIGH POINT VENT NOTE 5 2CW014 MANHOLE 2CW014A 1000
TO UNIT#2 CONDENSER M2-0111-2 A-7 2CW002A 2000
MO-0130-1 C-7 OWL003AB 200 TO SEA WATER STORAGE TANK
WL1
2CW013A 1000 NOTE 5 HIGH POINT VENT 2CW007 MANHOLE
TO ELECTROCHLORINATION AREA M1-0111-1 E-7
2CW058 2CW059 2CW085A 80
2CW002A 2000
2000X1500
2CW001AB 1500
TO SCREEN WASHING SYSTEM M1-0111-1 D-7
M1-0111-1 D-7
2CW092A 200
CW8
2CW091A 200
CW1
2-506
2ZT CW001A
DCS
2ZSO CW001A
MO
2ZSC CW001A
2CW001A
2PIT CW001A
2CW001AA 1500
2ZT CW001B
2ZSO CW001B
2ZSC CW001B
2CW001B
2PIT CW001B
2CW001AB 1500
DCS
2LIT CW001A NOTE 8
2LIT CW001B NOTE 8
"5"
NOTE 16
2CW001BA 1100
2CW001MA
CW1
P-6007 SKEC
2CW001PA NOTE 12
2CW001BB 1100
2CW001MB
2CW001PB NOTE 12
UNIT#2 CW PUMPS (2X50%) CAPACITY : 13200 M3/HR TDH : 34 M
UNIT 1 SCREEN WASHING M1-0111-1 C-3
LIT
2CW303F
2CW304F
DUAL FLOW TRAVELLING BAND SCREEN
DCS PLC LIT NOTE14
OSW305S
UNIT 1 EQUIPMENT P&ID M1-0111 SH.1
MOBILE TRASH RACK RAKE
BAR SCREEN
DEBRIS CHANNEL
2CW301F
2CW302F
DEBRIS BASKETS
STOP LOG GATES
CW8
SLOPE
OCW003A 300
CIRCULATING WATER INTAKE STRUCTURE WATER FROM SEA
CONTINUOUS DOSING SESP1
SHOCK DOSING SESP1
NOTE 7 HYPOCHLORITE DOSING SYSTEM P&ID 11217D-ME-DG-MJ420-P6018-00001-03 G3
"5"
CIRCULATING WATER INTAKE BOOM

PDC NUMBER	DESIGN PRESSURE (bar(g))	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (bar(g))	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (bar(g))	REMARKS
"3" CW16	6.50	35.000	4.40	30.000	D	S&L 0155	D	PAC 0659	N	9.75	ASTM312GRTP316L
CW2	6.50	35.000	4.40	30.000	D	PAC 0092	D	PAC 0659	N	9.75	GRP/FRP
CW3	6.50	40.000	4.40	35.000	D	PAC 0092	D	PAC 0659	N	9.75	GRP/FRP
CW5	3.50	40.000	2.60	35.000	D	PAC 0092	D	PAC 0659	N	5.25	GRP/FRP
CW8	5.20	35.000	4.00	30.000	D	PAC 0092	D	PAC 0659	N	7.80	GRP/FRP



NOTES:

1) FOR GENERAL NOTES REFER TO SHEET 1 OF THIS DRAWING.
2) ITEMS SHOWN WITHIN _ _ _ _ SHALL BE IN SUPPLIER SCOPE.
3) DELETED.
4) THE REDUCER AT THE PUMP SUCTION SHALL BE ECCENTRIC (FLAT ON TOP).
5) FLAT FACED FLANGES ARE USED AT PUMP SUCTION AND DISCHARGE.
6) DELETED.

HOLD INFORMATION	
NO.	DESCRIPTION

REFERENCE DRAWINGS	
M1-0131	P&ID CONDESER VACUUM SYSTEM
LHE-PP1306032-06	CCW HEAT EXCHANGER GENERAL ASSEMBLY DRAWING 11217D-ME-DW-MD690-P6032-00001
GDNK-PACO-0002	P&ID CONDESER VACUUM PUMP 11217D-ME-DG-MH730-P6087-00001
GDNK-PACO-0017	HEAT EXCHANGER GA & DATA SHEET 11217D-ME-DS-MH730-P6087-00010
SCH1412-172-003	DRAWING FOR STRAINER 11217D-PI-DW-PS100-P6077-00001

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	03-30-2013	M. PATEL	K. BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION
1	05-02-2014	M. H. PATEL	K. BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION WITH OPTION 2A UPDATES
2	09-28-2015	M. H. PATEL	K. BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION
3	02-26-2016	M. H. PATEL	K. BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE. INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA
Engineers: Sargent & Lundy
Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title: PACO POWER PLANT

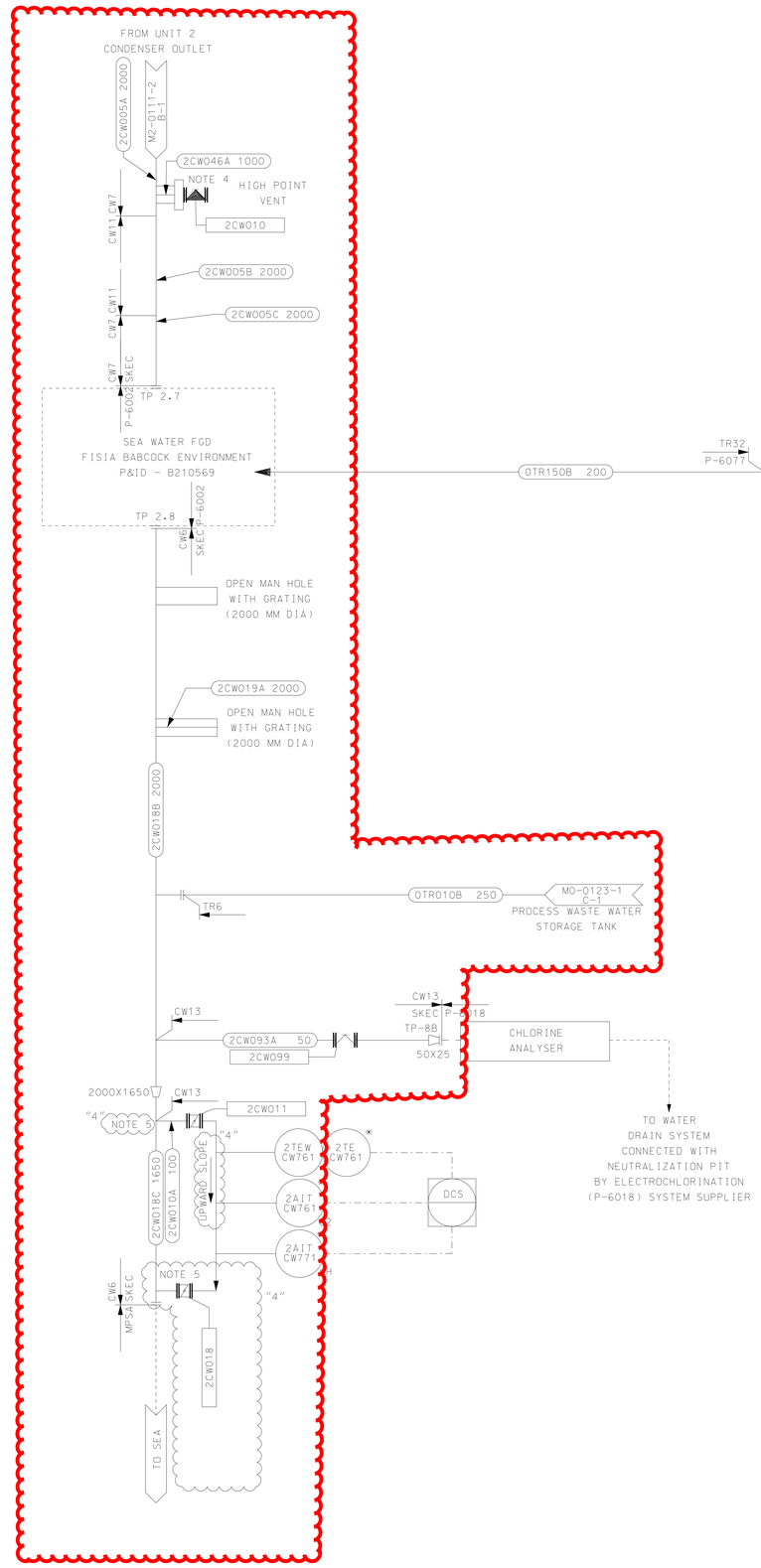
DRAWING TITLE

P & ID
AUXILIARY COOLING WATER SYSTEM

DRAWING NUMBER	REVISION
M2-0111	3
SHEET 3 OF 4	

CAD FILE: M2-0111-003.DGN

PDC NUMBER	DESIGN PRESSURE (bar(g))	DESIGN TEMP. (DEG. C)	MAX OPER. PRESSURE (bar(g))	MAX OPER. TEMP. (DEG. C)	PIPE CLASS	PDT	INSTR. PIPE CLASS	INSTR. PDT	INSUL-ATION TYPE	FIELD TEST PRESSURE (bar(g))	REMARKS
CW11	3.50	40.000	2.60	37.000	D	PAC 0096	D	PAC 0659	N	5.25	GRP/FRP
CW13	3.50	40.000	1.50	39.000	D	PAC 0092	D	PAC 0659	N	5.25	GRP/FRP
CW5	3.50	40.000	2.60	35.000	D	PAC 0092	D	PAC 0659	N	5.25	GRP/FRP
CW6	3.50	40.000	1.50	39.000	D	PAC 0095	D	PAC 0659	N	5.25	GRP/FRP
CW7	3.50	40.000	2.60	37.000	D	PAC 0095	D	PAC 0659	N	5.25	GRP/FRP
TR32	7.00	38.000	3.00	32.500	D	PAC 0091	D	PAC 0659	N	10.50	CPVC
TR6	3.50	60.000	1.00	50.000	W	S&L 0092	D	PAC 0659	N	5.25	HDPE



NOTES :
1) FOR GENERAL NOTES REFER TO SHEET-1 OF THIS DRAWING.
2) DELETED.
3) "*" MARKED ITEMS ARE LOOSELY SUPPLY FROM FGD SUPPLIER - FISIA BABCOCK ENVIRONMENT.
4) MANHOLE SHALL BE OF MINIMUM 600 MM SIZE. MANHOLES SHALL BE PROVIDED AT SUITABLE LOCATIONS AS PER PIPING LAYOUT.
"4" 5) INSTRUMENT INSTALLATION BRANCH PIPE SHALL GO INSIDE HEADER PIPE PER DETAIL SHOWN IN FISIA DRAWING "11217D-ME-DB-MJ350-P6002-00006 - HOOK UP PH+O2+T SENSOR INFLOW CHAMBER IN BYPASS".

REFERENCE DRAWINGS	
11217D-ME-DW-MJ350-P6002-00577	P&I DIAGRAM ABSORBER FGD UNIT 1
11217D-ME-DG-MJ420-P6018-00001	P&I DIAGRAM FOR ELECTROCHLORINATION SYSTEM
"4" 11217D-ME-DB-MJ350-P6002-00006 (0022.46)	HOOK UP PH+O2+T SENSOR INFLOW CHAMBER IN BYPASS

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

Contractors: SK E&C USA
Engineers: Sargent & Lundy
Client: Minera Panamá

PROJECT NO.: 12889-001

Project Title:
PACO POWER PLANT

DRAWING TITLE

P & ID
CIRCULATING WATER SYSTEM

DRAWING NUMBER	REVISION
M2-0111	4
SHEET 4 OF 4	

CAD FILE: M2-0111-004.DGN

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
4	02-10-2016	M. H. PATEL	K. BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION FOR PROJECT 13426-000
2	09-28-2015	M. H. PATEL	K. BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION
3	12-17-2015	M. H. PATEL	K. BELLIGUNDU	Y. MISHRA/R. JOHNSTON	ISSUED FOR CONSTRUCTION FOR PROJECT 13426-000

Sargent & Lundy
This drawing has been drawn by, or reproduced from, a drawing prepared for SKEC under S&L Project 12889-001. Modification is for MPSA under S&L Project 13426-000.